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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,698	01/22/2002	David Moore Glover	CCI-017US	9996

7590 09/29/2004

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EXAMINER	
FETTEROLF, BRANDON J	
ART UNIT	**PAPER NUMBER**
1642	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/914,698	GLOVER ET AL.	
	Examiner	Art Unit	
	Brandon J Fetterolf, PhD	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *6-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☒ Claim(s) *15-16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

The response filed on August 30, 2004 to the restriction requirement of June 28, 2004 has been received. Claims 1-16 are currently pending. Claims 6-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made of Group I (Claims 1-5 and 15-16) **without** traverse in the reply filed on August 30, 2004.

Claims 1-16 are currently pending

Claims 6-14 are withdrawn from consideration as being drawn to non-elected inventions.

Claims 1-5 and 15-16 are currently under consideration.

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. The specification on page 8, 3rd paragraph discloses the following embedded hyperlink, http://www.z.ebi.ac.uk.fastBl. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Objections

Claims 15-16 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-3 are rejected as vague and indefinite for reciting the term Asp in association with forming and/or maintaining MTOCs as the sole means of identifying the claimed molecule. The use of laboratory designations only to identify a particular molecule renders the claims indefinite because different laboratories may use the same laboratory designations to define completely distinct molecules. The rejection can be obviated by amending the claims to specifically and uniquely identify the Asp, for example, by SEQ ID NO. and function of Asp.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the instant case, the claims are inclusive of a genus of molecules identified in SEQ ID NO: 1 and fragments or derivatives thereof or a genus of molecules referred to as "ASP". However, the written description in this case only sets forth an Asp polypeptide consisting of the amino acid sequence of SEQ ID NO: 1.

The specification teaches (page 7) that specific Asp polypeptides of the invention include, but are not limited to, molecules that are capable of stimulating the formation and/or maintaining microtubule organizing centre MTOCs. The specification further teaches that Asp polypeptides include not only the *Drosophila* (page 1, sequence listing) Asp amino acid sequence SEQ ID NO: 1, but also any mammalian homologue of SEQ ID NO: 1 or fragment or derivative thereof. With regards to a homologue, the specification teaches (page 6, 4th paragraph) a homologous sequence

includes an amino acid sequence which is at least 20, 30, 40, or 50% identical at the amino acid level over at least 10-100, or 200-1000 amino acids with SEQ ID NO: 1. The specification further teaches (page 7, lines 1-10) that the preferred homologues comprise one or more of the following features: (1) a molecular weight from 150 to 300 kDA; (2) a basic charge at physiological ph; (iii) an N-terminal domain comprising one or more p34cdc2 consensus phosphorylation site, one or more MAP kinase consensus phosphorylation site; and/or one or more MPM2 epitope phosphorylation sites; (iv) a central domain comprising a putative actin binding site; and (v) a C-terminal coiled-coiled domain containing two or more IQ motifs. However, the written description only reasonably conveys one species of Asp polypeptides (SEQ ID NO: 1) and; therefore, does not commensurate with the full scope of any/all homologs, fragments or derivates thereof of SEQ ID NO: 1. A description of a genus may be achieved by means of a recitation of a representative number of species falling within the scope of the genus or by describing structural features common the genus that "constitute a substantial portion of the genus." See University of California v. Eli Lilly and Co., 119 F.3d 1559, 1568, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997): "A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cNDA, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus."

The court has since clarified that this standard applies to compounds other than cDNAs. See University of Rochester v. G.D. Searle & Co., Inc., __F.3d__,2004 WL 260813, at *9 (Fed.Cir.Feb. 13, 2004). The instant specification fails to provide sufficient descriptive information, such as definitive structural or functional features that are common to the genus. That is, the specification provides neither a representative number of molecules that encompass the genus of Asp polypeptides that are capable of stimulating MTOC formation and/or maintenance nor does it provide a description of structural features that are common to the molecules. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, the disclosure of one species of Asp polypeptides is insufficient to describe the genus. Thus, one of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe and enable the genus as broadly claimed.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in

possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure(s) of the encompassed genus of Asp polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence. Therefore, only an Asp polypeptide consisting of the amino acid sequence SEQ ID NO: 1, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Claims 1-5 are further rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for identifying a substance capable of disrupting microtubule organizing centre (MTOC) integrity by contacting an Asp polypeptide consisting of the amino acid sequence of SEQ ID NO: 1, does not reasonably provide enablement for identifying a substance capable of disrupting microtubule organizing centre (MTOC) integrity by contacting any and all homologs or fragments thereof a Asp polypeptide. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The factors to be considered in determining whether undue experimentation is required are summarized In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). The court in Wands states: "Enablement is not precluded by the necessity for some experimentation such as routine

screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

The claims are drawn broadly to a method of identifying a substance capable of disrupting microtubule organizing centre (MTOC) integrity by contacting an ASP polypeptide or homologue thereof or fragment thereof capable of forming and/or maintaining MTOC in the absence of the substance.

Thus, it appears that not only the Asp polypeptide consisting of the amino acid sequence of SEQ ID NO: 1, but any and all homologues or fragments of an Asp polypeptide (SEQ ID NO: 1) can be used for this system as long as they are capable of forming and/or maintaining MTOC in the absence of the substance.

However, one cannot extrapolate the teachings of the specification with the scope of the claims because the claims are drawn to a system for identifying a substance that interacts with an Asp polypeptide or homologue thereof or fragment thereof whereby disrupts microtubule organizing centre (MTOC) integrity. The specification provides insufficient guidance and/or objective evidence that any and all homologues or fragments of an Asp polypeptide will form and/or maintain MTOC integrity in the absence of a substance. The specification teaches (page 6, 4th paragraph) a homologous sequence includes an amino acid sequence which is at least 20, 30, 40, or 50% identical at the amino acid level over at least 10-100, or 200-1000 amino acids with SEQ ID NO: 1, but does not appear to disclose any examples that a homolog comprising an amino acid sequence 20-50% identical to SEQ ID NO: 1 would form and/or maintain MTOC integrity. Further, the specification teaches (page 3, bottom paragraph) that peptides (*fragments*) consisting essentially of 5 to 35 amino acids comprising an amino acid sequence selected from resides x-y

(*generic term*) of SEQ ID NO: 1 are capable of disrupting MTOC integrity. Thus, the teachings above do not clearly indicate that any and all homologues or fragments of an Asp polypeptide (SEQ ID NO: 1) are capable of forming and/or maintaining MTOC integrity.

In addition, those of skill in the art recognize that protein chemistry is probably one of the most unpredictable areas of biotechnology. For example, Burgess *et al.* (J. Cell Biol. 111:2129-2138, 1990) shows that a conservative replacement of a single "lysine" residue at position 118 of acidic fibroblast growth factor by "glutamic acid" led to a substantial loss of heparin binding, receptor binding and biological activity of the protein. Similarly, Lazar *et al.* (Mol. Cell Biol. 8:1247-1252, 1998) teach that in transforming growth factor alpha, replacement of aspartic acid at position 47 alone with alanine or asparagines did not affect biological activity while replacement with serine or glutamic acid sharply reduced the biological activity of the mitogen. Wen *et al.* (Proc. Natl. Acad. Sci. U.S.A. 98: 4622-4627, 2001) demonstrate that a mutation in PTEN (G129D), a phosphatase with specificity for 3-phosphorylated inositol phospholipids, impaired the lipid phosphatase activity and its role in angiogenesis. These references demonstrate that even a single amino acid substitution or what appears to be an inconsequential chemical modification will often dramatically affect the biological activity and characteristics of a protein. Therefore, absent the evidence that a homolog or fragment thereof of an ASP polypeptide (SEQ ID NO: 1) can form and/or maintain MTOC integrity, one of skill in the art would not be able to predictably use any and all homologs, fragments or derivatives of the amino acid sequence of SEQ D NO: 1 in any method to identify a substance that disrupts MTOC integrity without undue experimentation.

Reasonable correlation must exist between the scope of the claims and scope of enablement set forth, and it cannot be predicted from the disclosure that any and all homologues or fragments of an Asp polypeptide (SEQ ID NO: 1) would form and/or maintain MTOC. Therefore, in view of the lack of predictability of the prior art, the breadth of the claims and the absence of working examples, it would require undue experimentation for one skilled in the art to practice the invention as claimed.

Therefore, NO claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon J Fetterolf, PhD whose telephone number is (571)-272-2919. The examiner can normally be reached on Monday through Friday from 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Siew can be reached on 571-272-0787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Examiner
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BF

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PRIMARY EXAMINER